



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,245	01/05/2001	Christopher E. Ruckman	V1000.0003/P003	3645

24998 7590 03/23/2005

DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP  
2101 L Street, NW  
Washington, DC 20037

EXAMINER
----------

TORRES, MELANIE

ART UNIT	PAPER NUMBER
----------	--------------

3683

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/754,245

Applicant(s)

RUCKMAN ET AL.

Examiner

Melanie Torres

Art Unit

3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23, 25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al. in view of Lipo et al.

Re claims 1, 4, 5, 13-19, 23 and 25, Owen et al. discloses a vibration control system comprising an actuator (16) for selectively applying forces to a controlled structure at a first region of the controlled structure so that substantial vibration cancellation occurs at a third region of the controlled structure, the actuator consisting of a sensor (26), and a digital control system (18) for operating actuators as a function of sensed vibration of a variable-state structure, sensed vibration of a feedforward reference and the variable state of the variable state structure. (Figure10)

However, Owen et al. do not teach an actuator consisting of an armature comprising a flux sensor and a force-linearized flux generated in a gap between an armature and a magnetic coil as a function of sensed vibration and wherein a flux sensor which sends signals representative of the flux generated in the gap between the armature and the magnetic coil. Jacot et al. teaches an actuator (28) consisting of an

armature (66) comprising a flux sensor (76) and a force-linearized flux generated in a gap between an armature and a magnetic coil as a function of sensed vibration and wherein a flux sensor which sends signals representative of the flux generated in the gap between the armature and the magnetic coil. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the flux sensor of Jacot et al. in the control system of Owen et al. in order to reduce the size of the gaps necessary for alternative actuators.

Re claim 2, Owen et al. as modified teaches wherein the magnet coil (60) is integrally fixed to the controlled structure. (Fig. 5)

Re claim 3, Owen et al. as modified teaches wherein the flux sensor (76) is connected to the magnet coil (60). (Fig. 5)

Re claim 6, Owen et al. as modified teaches wherein the digital control system includes modal feedback loops (212) for controlling the actuators in response to signals from the vibration sensors (76).

Re claim 7, Owen et al. as modified teaches wherein the gains of the modal feedback loops are controlled as a function of the variable state of the variable-state structure. (Column 9, lines 39-66)

Art Unit: 3683

Re claim 8, Owen et al. as modified teaches one or more feedforward sensors (26) for sensing vibration of feedforward references.

Re claim 9, Owen et al. as modified teaches wherein the digital control system (18) includes one or more feedforward loops for controlling the actuators in response to signals from the feedforward sensors (26).

Re claims 10-12, Owen et al. as modified teaches wherein the plant transfer functions of the feedforward loops are controlled as a function of the variable state of the variable-state structure.

Re claim 20, Owen et al. as modified teaches wherein the processor (20) is arranged to calculate the difference between the flux density sensed by the magnetic flux density sensor and the flux density required in the actuator. (Column 9, lines 39-66)

Re claim 21, Owen et al. as modified teaches wherein the electromagnet (60) is integrally connected to the variable-state structure, and the armature (66) is integrally connected to an external structure.

Re claim 22, Owen et al. discloses wherein the electromagnet (60) is sealed to prevent degradation by fluids and dust. (Fig. 5)

***Allowable Subject Matter***

3. Claim 26 is allowed.

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Torres whose telephone number is (703)305-0293. The examiner can normally be reached on Monday-Friday, 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci can be reached on (703)308-3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/754,245  
Art Unit: 3683

Page 6

MT  
March 20, 2005

*Melanie Torres*  
3-20-05